

Solve problems for mirrors and lenses using ray diagrams and lensmaker's equation.

virtual image - is not formed by light rays

real image is formed by light rays, you can see it on a screen.

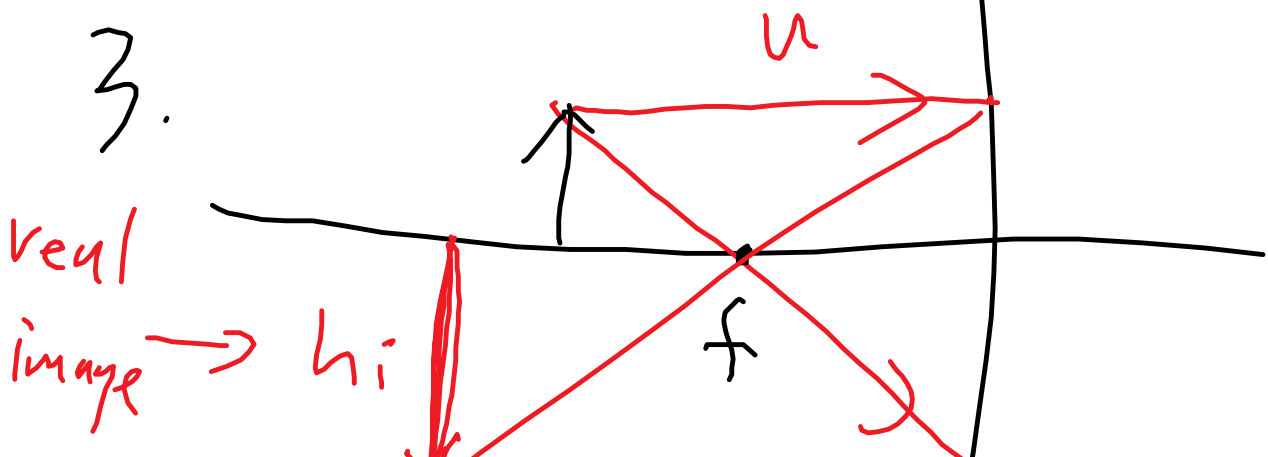
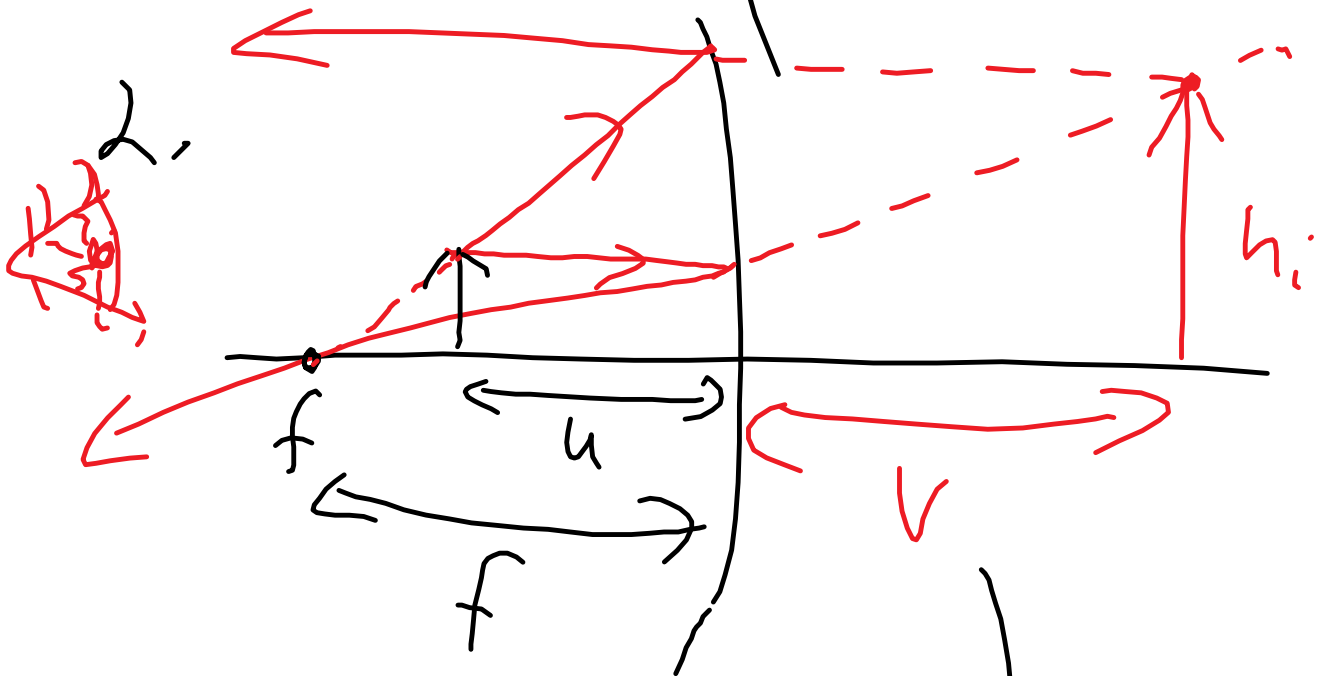
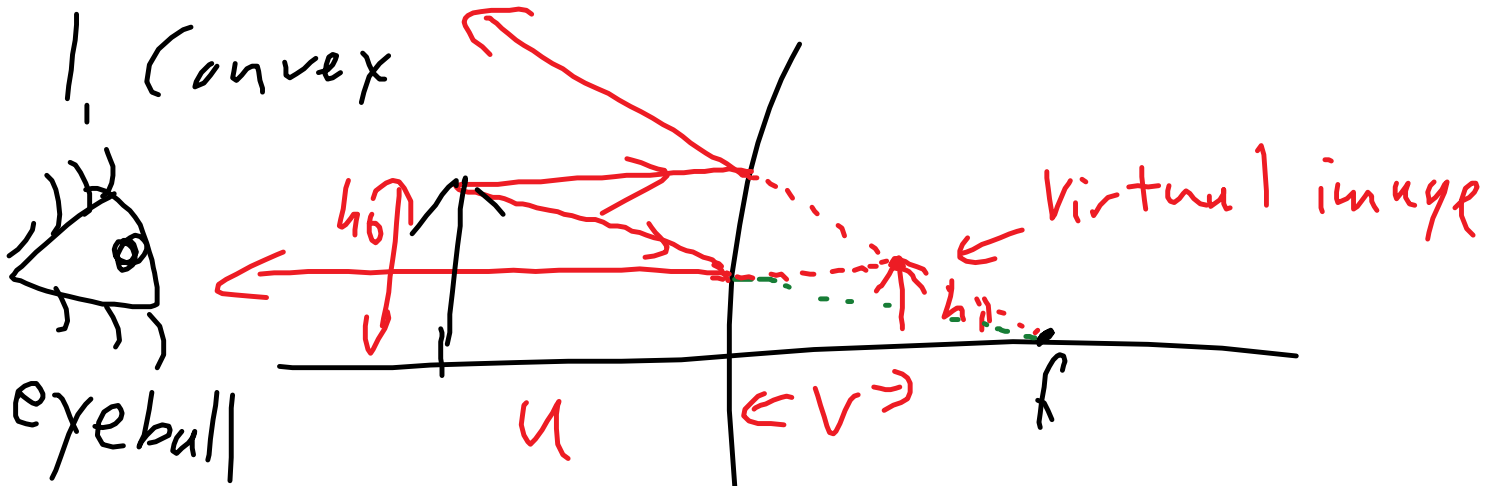
3 types of mirror ray diagrams

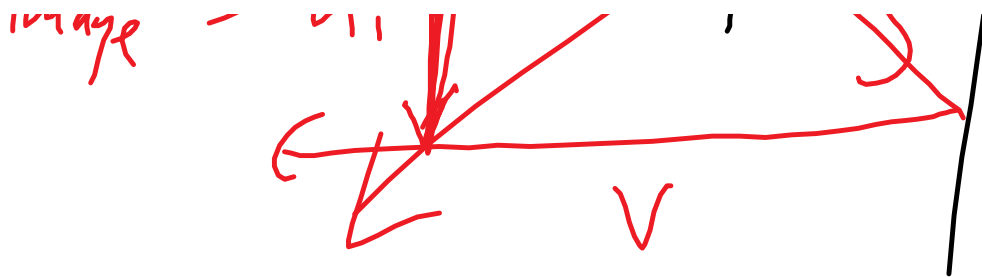
1. convex mirror
2. concave mirror, $u < f$
3. concave mirror, $u > f$

Steps

1. Draw Principle Axis
2. Draw mirror/lens
3. Draw object - usually symbolize as an arrow above P.A.
4. mark focal point(s)
5. Draw light rays, from top of object
 1. Parallel to P.A. $\rightarrow f$
 2. through f \rightarrow Parallel

2. ... to P.A.
 3. lens \rightarrow ray through vertex - straight





the radius of curvature of
a spherical mirror $\approx 2f$

spherical aberration - edges of the mirror, the image is warped. - prevented by using parabolic mirrors (Newton spun a bowl of mercury to make a parabolic mirror).

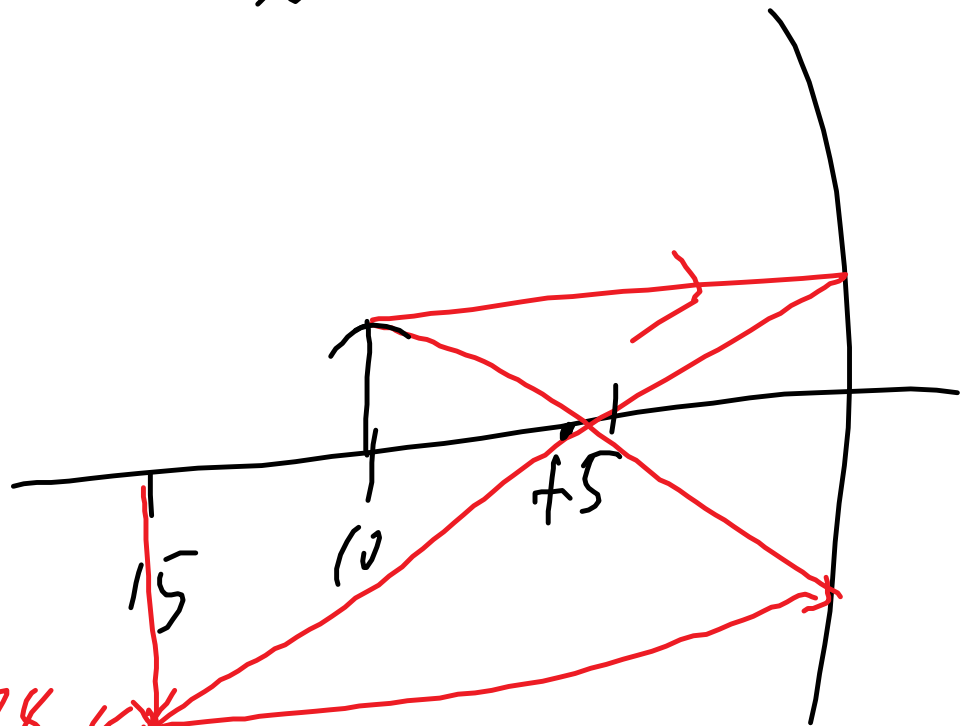
eg. look at q2 from the homework

$$\text{chent} - \frac{1}{f} = \frac{1}{u} + \frac{1}{v}$$

$$\frac{1}{60\text{cm}} = \frac{1}{100\text{cm}} + \frac{1}{v}$$

$$\frac{5}{300\text{cm}} = \frac{3}{300\text{cm}} + \frac{1}{v}$$

$$\frac{2}{36} = \frac{1}{v} \quad v = 15 \text{ cm}$$



P 374-378
Q 1-4
Q 5-12

observe through lenses

D or P = $\frac{1}{f}$ in diopters, $D = \frac{1}{m}$